

workpiece to infrared heat energy from the infrared heat energy source and
maintaining said tool steel workpiece stationary during subjection of the workpiece
to heat treatment from the infrared energy source.

16. In a method of heat treating a rod or bar or block [and other] tool steel
workpiece[s] the steps of

providing a heat treatment furnace of a size suitable to receive said tool steel
workpiece to be heat treated,

providing a source of infrared heat energy in the interior of the furnace consisting of
tungsten halogen lamp means

subjecting the tool steel workpiece to heat treatment by exposing said tool steel
workpiece to infrared heat energy from the tungsten halogen lamp means and

maintaining said tool steel workpiece stationary during subjection of the workpiece
to heat treatment from the infrared energy source.

REMARKS

This Amendment is filed following a telephone discussion with the Examiner on
February 11, 2002, the telefax submittal of an unofficial paper by the applicant entitled
"UNOFFICIAL PAPER FOR DISCUSSION ONLY" on February 15, 2002, and a
subsequent telephone discussion with the Examiner on February 20, 2002. At the conclusion
of the February 20 discussion the Examiner agreed that the amendments to claims 15 and 16
contained in the paper filed February 15 overcome the basis for rejection of said claims and

their dependent claims. In conformity with the agreement reached in the February 20 discussion we are herewith amending claims 15 and 16 as discussed. Further we set out below in quote or paraphrased form supporting comments relevant to the new claims.

The issue which the appeal conference participants crystallized in the current appeal is whether such claim terminology as "maintaining said tool steel workpiece stationary" can be appropriately claimed. We now set out comments on this matter as discussed with the Examiner.

The words "maintaining stationary" do not appear in the application as filed.

However, the fact that the workpieces are maintained stationary during heat treatment is disclosed in the application as filed, and this mode is the only mode disclosed. This can be seen from the following comments.

Since, as we read the Answer, the inclusion of "other tool steel workpieces" in the claims impermissibly broadens the claim in the view of the Examiner to the point where moving workpieces can be included, the claims have been revised to cover only the disclosed workpieces, all of whom can only be heat treated in a stationary condition.

Support for the claimed subject matter appears in the specification as filed as follows.

Original Specification:

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lines 8, 9: " . . . the invention will be described . . . as applied to . . . the heat treatment of tool steels":

In the "Making, Shaping and Treating of Steel", published by United States Steel

Corporation, 8th Edition, there appears, on page 1097, under "HEAT TREATMENT OF ALLOY TOOL STEELS":

"The maximum hardness will usually be developed at temperatures of 1000° to 1100°F, and the holding times in this temperature range usually are from 1 to 4 hours."

A specification of a holding time of from 1 to 4 hours is a description, only, of a stationary process.

line 9: "tool steel":

The phrase "tool steel" is synonymous with rods, bars and blocks, which are always treated in a stationary condition; the phrase is not synonymous with material, such as strip or strap or wire, which is thin enough to have its metallurgical properties desirably altered while in motion; i.e.: a strip or strap or a wire is not a "tool steel".

lines 15 and 19: "decarburized"; "decarburization":

In the "Marking, Shaping and Treating of Steel", supra, there appears, on page 1053 under "HEAT-TREATMENT PROCEDURES":

"Unless special precautions are taken, heating . . . may . . . result in decarburization"

and also,

"Too rapid a heating rate may set up high stresses . . . and is, therefore,

generally undesirable. A heating time of one hour per inch of section is commonly employed, and this is a safe rule."

It is recognized without exception in the tool steel industry that tool steel workpieces measured in inches of thickness are never treated while in motion; they are always treated while stationary.

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lines 19, 20: **"In operation the workpieces should preferably be placed as close together as convenient since the beamed heat energy cannot distinguish between a workpiece and the workpiece support structure."**

Placing workpieces "close together" denotes separate objects in situ; indeed "place" means "a part of space", Websters New World Dictionary, 1972.

"Workpiece support structure", when considered in conjunction with "placing" the workpieces "close together" has no meaning in relation to motion; it only means stationary objects.

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lines 1, 2: **"Ceramic or other high melting point support structures should be used to support the workpieces to the extent practical."**

"Ceramic . . . support structures" which support workpieces describe a only stationary

condition since no use of movable ceramic structures in supporting contact with a tool steel workpiece are known.

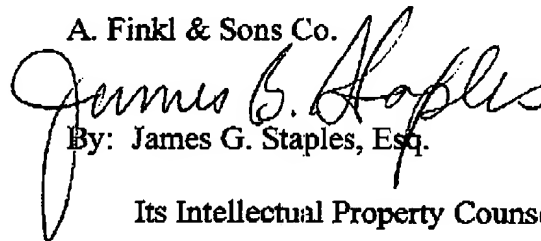
lines 3, 6, 8: "two inch thick rods"; "block having a 10' x 10" cross section";
"irregularly shaped workpieces."

Two inch thick rods and bars and 10" by 10" blocks require a minimum dwell time in the furnace of 2 hours; see lines 8, 9, page 1 above and the quoted principles from "Making, Shaping & Treating of Steel" there cited. No moving heat treatment furnace with a minimum dwell time for tool steel workpieces is known; only a stationary furnace is described.

Since, with the foregoing amendments to claims 15 and 16 all grounds of rejection have been overcome, remand of the application from the Board to the Examiner, and entry of the amendment and formal allowance of the application, is respectfully required.

Respectfully submitted,

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